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Upcoming Events:

Hurry and RSVP!

GSCCC Stakeholder Meeting, December 6, 2013,
DES Offices, Concord. 9:00-11:30 a.m., DES Offices, 29
Hazen Dr., Concord. (Refreshments and networking 8:30-
9:00.) **The public is welcome.**

DON'T MISS these two *exciting* presentations:

Doug Fraser of Dartmouth College's Thayer School of Engineering will
present on the "Origins and Evolution of the **Formula Hybrid Stud**
Competition."



Texas A&M's 2011 entry. (Photo courtesy of *Dartmouth Engineer* magazine.)

Rob Lynds of Tri State Truck Center will present on
"Optimizing Fleet Performance in the Winter Months."



Be proactive with your winter care regimen. (Photo courtesy of Gary's Auto Repair Service.)

RSVP: dolores.rebolledo@des.nh.gov.

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Massachusetts Clean Cities Stakeholder Meeting,
December 12, 2013, Marlborough, MA. 9:30 a.m.-12:00 p.m.
Topics to be presented:

- **Generating Electricity on Roadways**
- **Propane as an AutoGas.**

Grant funding to be announced. Contact Stephen Russell
(Stephen.Russell@State.MA.US) for more information.

Regional Biodiesel Industry Forum, December 16, 2013,
Mansfield, CT. 9:00 a.m.-4:00 p.m. The forum will include panel discussions from policymakers and top biodiesel producers on the latest innovations, applications, and potential future uses and benefits of biodiesel for the economy and the environment. Click [here](#) to register.

Webinar: Anatomy of a Work Truck, December 17, 2014,
3:00 p.m. ET. Doyle Sumrall from NTEA will present on this topic and will cover terms, lingo and processes used by OEMs, upfitters and fleets. The webinar is open to all:

Audio

888-807-9760

Participant passcode: 7838303

Web

URL: <https://www.mymeetings.com/nc/join/>

Conference number: PW5640154

Audience passcode: 7838303

Participants can join the event directly at:

<https://www.mymeetings.com/nc/join.php?i=PW5640154&p=7838303&t=c>

Year-End Annual Report Survey is coming up! Get ready to submit your fleet information for our year-end survey. The questionnaire will be sent to you via email during the last week in December. Your information provides Clean Cities and the US Department of Energy concrete data of the petroleum reduction efforts of responsible fleets in New Hampshire.

Education Opportunities:

Save the date! Natural Gas Workshop, April 29, 2014, Concord, NH. This all-day workshop will provide a comprehensive overview of Compressed Natural Gas (CNG) vehicles and infrastructure with tips on transitioning your fleet to CNG! Details to follow.

News of Interest:



Jeff Julian of the National Alternative Fuel Training Consortium talks with first responders.

First responder course held on December 3rd.

Over 30 firefighters attended GSCCC's First Responder Course for Gaseous Fuels, which was held at the NH Fire Academy. Many thanks to the Academy's Andy Anderson and Chris Johnson of the Fire Instructors and Officers Training Association of NH for getting the word out to first responders, and to stakeholders **North American Equipment Upfitters, Inc., AVSG, City of Concord, Nuvera, Patsy's Truck Sales, Ed Anderson, and Eastern Propane** for providing the vehicles during the hands-on training portion. (No vehicles were harmed during this exercise!) The training was made possible through the support of a US Department of Energy grant.

Granite State Clean Cars Program has a new look!

Granite State Clean Cars is a GSCCC program designed to help consumers choose more fuel efficient vehicles. Participating dealerships apply the Clean Cars sticker to the window of qualifying cars as they are delivered so customers can see which are the "cleaner" cars when perusing the lot. The ten

year old program is going strong with a growing number of dealerships signing on.



The vehicle on the Clean Cars logo has been upgraded and a "Best of the Rest 2013" report on vehicles of other classes (such as SUV and mini-van) is now offered, providing consumers in the market for a bigger vehicle to see the greener options.

Additionally, the program criteria has changed for 2013 and newer vehicles, requiring a minimum of 33 mpgs highway and favorable Tier 2 Bin and/or are California PZEV or LEV-II rated. 2012 and older vehicles require a minimum of 30 mpg rating to qualify for the sticker.

MotorWeek visits City of Nashua to film a Clean Cities Success Story. A *MotorWeek* film crew visited the City of Nashua last month to film the City's compressed natural (CNG) fleet project. The city has 40 CNG vehicles in its fleet and boasts the state's first public-access CNG station. Produced by Maryland Public Television's *MotorWeek* program, this short segment aired on PBS stations nationwide on **Nov. 16, 2013**. Did you miss it? Don't worry! *MotorWeek* is also available on [Velocity by Discovery](#) and previous video segments are available on the [Alternative Fuels Data Center](#). New segments will be posted as they air.



A City of Nashua biodiesel transit bus got in on the action too!

TRS Question of the Month: *What are the key terms to*

know when discussing ethanol flexible fuel vehicles (FFVs) and their fueling infrastructure?

Answer: It is important to know how to “talk the talk” when it comes to FFVs. Becoming familiar with the terms below will help you better understand these vehicles and the associated fueling infrastructure so that you can ask the right questions and make informed decisions.

FFV: An FFV is a vehicle that has an internal combustion engine and can run on E85 (defined below), gasoline, or a mixture of the two. Except for fuel system and powertrain adjustments that allow the vehicles to run on higher ethanol blends, FFVs are virtually identical to their conventional gasoline vehicle counterparts; however, drivers can expect a slightly lower fuel economy when driving on ethanol compared to gasoline, depending on the ethanol blend.

Types of Ethanol

Ethanol can be categorized into two main types based on the feedstocks used for its production:

- **Starch- and sugar-based ethanol:** Produced from feedstocks like corn, wheat, milo, and sugarcane, starch- and sugar-based ethanol makes up the majority of all domestic ethanol production. In fact, corn is the most common ethanol feedstock in the United States. This type of ethanol is manufactured through dry- or wet-mill processing. More than 80% of ethanol plants are dry mills due to lower capital costs. Dry-milling consists of grinding corn into flour and fermenting the mixture, resulting in distiller grain and carbon dioxide co-products. Wet mills separate the starch, protein, and fiber in corn prior to processing these components into products, such as ethanol.
- **Cellulosic ethanol:** Produced from feedstocks like crop and wood residues, dedicated energy crops, and industrial and other wastes, cellulosic ethanol offers advantages over starch- and sugar-based feedstocks (e.g., no concerns with food versus fuel). Feedstock components include cellulose, hemicellulose, and lignin. Because it is more challenging to extract sugars necessary for ethanol production from these feedstocks, cellulosic ethanol is more difficult to manufacture than starch- and sugar-based ethanol. This type of ethanol can be produced through two conversion pathways:
 - **Biochemical:** Feedstocks are pretreated to release hemicellulose sugars and then undergo hydrolysis to break cellulose into sugars. Sugars are fermented into ethanol, and lignin is recovered and used to produce energy to power the process.
 - **Thermochemical:** Heat and chemicals are added to feedstocks to create a mixture of carbon dioxide and hydrogen, also known as syngas. Syngas is then mixed with a catalyst to produce ethanol.

Ethanol Blends

The following ethanol blends can be used in conventional gasoline vehicles (note model year restrictions for E15):

- **E10:** (10% ethanol, 90% gasoline) – E10 is classified as "substantially similar" to gasoline by the U.S. Environmental Protection Agency (EPA) and is legal for use in any gasoline-powered vehicle. More than 95% of the U.S. gasoline supply contains up to 10% ethanol to boost octane, meet air quality requirements, or satisfy the Renewable Fuel Standard (RFS2), which calls for 36 billion gallons of biofuels to be blended into transportation fuel by 2022. E10 must meet ASTM D4806 fuel specifications. ASTM International develops specifications for conventional and alternative fuels to ensure proper vehicle operation and safety.
- **E15:** (15% ethanol, 85% gasoline) – E15 is legal for use in model year 2001 and newer vehicles; however, there are several EPA and state agency requirements and regulations stations must adhere to when selling E15. Fuel producers that market E15 are required to individually register with EPA. While E15 does not qualify as an alternative fuel under the Energy Policy Act of 1992 (EPA Act), it does help meet RFS2. E15 must meet fuel specifications laid out in ASTM D4806 and cannot be used in motorcycles, heavy-duty vehicles, off-road vehicles, or off-road equipment.

The following ethanol blends above E15 should only be used in FFVs due to material and compatibility issues associated with the high alcohol content of ethanol:

- **Mid-level blends:** Blender pumps (defined below) can create various other ethanol blends between E15 and E85 (also defined below). E20 (20% ethanol, 80% gasoline) and E30 (30% ethanol, 70% gasoline) are the most common blends selected. Mid-level ethanol blends must meet fuel specifications laid out in ASTM D7794.
- **E85:** E85 is considered an alternative fuel under EPA Act and can contain 51% to 83% ethanol, depending on geography and season. This variance in ethanol content is allowed to ensure proper starting and vehicle performance in geographic locations where cold temperatures can affect fuel properties. Though dependent on the blend, drivers can expect about 27% less energy per gallon than gasoline, resulting in a corresponding reduction in fuel economy, when using E85. E85 must meet ASTM D5798 fuel specifications.

Infrastructure

Low-level ethanol blends up to E10 have already been incorporated into the majority of the U.S. gasoline supply, and fueling stations that supply these blends are not required to update their fueling infrastructure. Ethanol blends above E10, however, do require specific ethanol-compatible equipment, including:

- **Dispensers:** E85 and blender pump dispensers require specialized metals and seals to perform with high concentrations of ethanol. Permitting authorities typically require all ethanol dispensers to be UL-listed for the ethanol blend dispensed.

- **Hanging hardware:** Hanging hardware, including hoses, nozzles, swivels, and breakaways used to dispense ethanol blends should use ethanol compatible materials. Permitting authorities typically require hanging hardware to be UL-listed for the ethanol blend dispensed.
- **Storage tanks:** EPA guidance allows underground storage tank (UST) manufacturers to provide a statement of compatibility for their products with specific biofuels blends. All tank manufacturers have issued statements of compatibility with ethanol blends. For a list of UST manufacturers and their ethanol-compatibility statements, please refer to the *Clean Cities Handbook for Handling, Storing, and Dispensing E85 and Other Ethanol-Gasoline Blends* (www.afdc.energy.gov/uploads/publication/ethanol_handbook.pdf).

Most stations that dispense mid-level blends also have the following:

- **Blender pump:** This type of fuel dispenser offers FFV owners a variety of ethanol-blended gasoline products between E15 and E85. Blender pumps draw fuel from two separate storage tanks (E10 and E85) and can dispense preprogrammed blends of those fuels. Blender pumps also may be used to dispense E15 legally. Note that blender pumps currently are offered only at select fueling stations and are mainly concentrated in the Midwest. The Alternative Fuels Data Center (AFDC) Fueling Station Locator (<http://www.afdc.energy.gov/locator/stations/>) includes details about E85 stations with blender pump availability.

Additional information on FFVs, ethanol feedstocks, and infrastructure can be found on the AFDC Ethanol website (<http://www.afdc.energy.gov/fuels/ethanol.html>).

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